

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1 1. A process for melting thermoplastic material, particularly in the
2 form of strip-like or fibrous refuse, in which the material is melted through
3 contact with a liquid heat-transfer medium and is then separated from the heat-
4 transfer medium, wherein steam at a temperature distinctly higher than the
5 melting temperature of the material is used as a heat-transfer medium and is
6 conducted over the introduced material, the molten or at least semi-molten
7 material is entrained by the flowing steam and is then separated from the
8 steam at temperature lying above the melting temperature of the material, and
9 the steam is returned to the circuit.

1 2. A process according to claim 1, wherein the steam is heated to a
2 defined temperature before the material is introduced and, after heating, a
3 portion of the heated steam is diverted in order to set the temperature for the
4 separation of steam and material.

1 3. A process according to claim 1, wherein the material inside a
2 container through which steam can flow is brought into the flowing steam.

1 4. A process according to claim 1, wherein the flow rate of the mixture
2 of steam and entrained material is distinctly reduced.

1 5. A process according to claim 4, wherein the flow rate is reduced by
2 more than a factor of 10.

1 6. A process according to claim 5, wherein the flow rate is reduced by
2 a factor of 20.

1 7. A process according to claim 1, wherein the steam and material are
2 separated by means of centrifugal force.

1 8. A process according to claim 2, wherein the steam released by the
2 entrained material, together with the steam used to adjust the temperature for
3 the separation process, is guided to a steam accelerator.

1 9. A process according to claim 1, wherein the temperature of the
2 steam is set at 300° C to 500° C, ideally 400° C to 500° C

1 10. A process according to claim 1, wherein the flow rate of the steam
2 is set at 80 to 120 m/s, ideally 90 to 120 m/s.

1 11. A process according to claim 1, wherein the density of the steam
2 for contact with the material is set at 1.15 to 1.25 kg/m³.

1 12. A process according to claim 1, wherein the steam employed is
2 water vapor.

1 13. A device for implementing the process according to claim 1, with a
2 fan for the continuous circulation of steam in a conducting circuit, at least one
3 nozzle device for the regulated introduction of liquid into the steam flow, a
4 steam generator, behind which is positioned a melting compartment in which
5 the material projects into the steam flow, and a heated separation stage for
6 separating the steam from the molten material.

1 14. A device according to claim 13 with a branch line which diverges
2 upstream from the melting compartment, which opens into a housing for the
3 separator stage.

1 15. A device according to claim 14, in which the separator level
2 exhibits a closed separator compartment, which together with the housing
3 forms a heating space through which steam flows, from which heating space
4 an outlet line opens into the steam circuit.

1 16. A device according to claim 13, in which the separator stage is a
2 centrifugal separator.

1 17. A device according to claim 13, in which a conducting component
2 with a clearly increased flow cross-section relative to the melting
3 compartment is inserted between the melting compartment and the separator
4 stage.

1 18. A device according to claim 13, in which the conducting circuit is
2 closed.

1 19. A device according to claim 13, with a nozzle device for the
2 regulated introduction of liquid for adjusting the steam density of the flowing
3 steam, which nozzle device is positioned immediately in front of the melting
4 compartment.

